File
J. G. Mallon

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RECEIVED
REGION VII
SEP 17 1964
PHILADELPHIA OFFICE

August 25, 1964

Milford Rivet and Machine Company
Penn Division
Hatboro, Pennsylvania (Montgomery Co.)

Attention: Mr. Franklin Sahm,
Manager

RE: Industrial Waste Plant
Supervisory Contract

Gentlemen:

Complying with the subject contract, the writer visited your plant on August 19 for the regular monthly inspection of waste treating and handling facilities together with the collection of samples representing the waste discharge to the public sewer system.

From a review of records and discussion with operating and supervising personnel, it appeared that the plant was functioning normal and appropriate treatment being applied to all wastes prior to discharge.

Inspection of the samples collected during the month indicated reasonably satisfactory treatment. The analytical data on the samples delivered to our laboratory appear on the attached report.

Your review of these data will show that portions of the composited raw and composited treated indicate a reduction in cyanide to a negligible value and solids substantially reduced. Wastes of this quality would not interfere with the sewage treatment process practiced by the Authority.

Random samples collected show that on July 29 complete destruction of cyanide and almost complete removal of solids was accomplished. On the sample collected August 12, the cyanide content in the raw waste was particularly high and the treatment applied allowed a residual of 2 ppm in the effluent. This is somewhat higher than desirable although probably would not cause any difficulties in the sewage treatment process due to the high rate of dilution prior to its being received at the plant. Solids reduction in this particular sample was not quite as great as in some of the others, however, it was still well within acceptable limits. The pH of the samples collected were satisfactory. We urge that your operator make sure that a strong positive chlorine residual is present in all batches prior to discharge.

SEP 16 1964

Your several lagoons were inspected and found to be in excellent condition and very low in level. It is apparent that previous difficulties with wildlife boring through the lagoon dikes has been overcome. There appeared to be very little accumulation of oil and it is understood that the amount of oil present in the raw wastes has been substantially reduced.

Your operator has reported that when some miscellaneous wastes collected in the operations, principally those containing white lead, are deposited in the lagoon, excessive odors appear to develop. Although we do not know the exact reason for this reaction, it was suggested that this particular waste be accumulated in the used calcium hypochlorite drums and sent to the local dump with the rest of the solid wastes carted to that point. The extremely small amount of these materials will cause no particularly increased costs or create any additional hazard at the disposal area.

We discussed at some length the need for a new pH meter for the control of your treatment. Although you have been recently controlling the treatment chemicals by a combination of a meter working part of the time and pH papers, we request that you give consideration to the purchase of a new meter for this purpose. It must be borne in mind that the present meter was purchased more than 10 years ago and although continued maintenance has been necessary, these surroundings and use are not completely favorable for delicate mechanism. However, the control of your chemicals and the satisfactory treatment of the wastes are dependent upon proper pH values being maintained and consequently we deem it necessary that an electric pH meter be maintained.

A wide range of these devices are available on the market, each having certain advantages and adaptability.

The writer reviewed with you a meter available through a vendor through which you purchase a variety of maintenance products. This meter was listed at slightly over $250.00. If the writer remembers correctly this was available through McMaster and Carr, Inc., Chicago, Illinois. From the appearance it is a product of Industrial Instruments, Inc. Their units, if properly maintained are satisfactory.

As an alternate to this, Analytical Measurements, Inc., 490 Morris Avenue, Summit, New Jersey 07901, offer a line operated pH meter with a protected pH probe for $145.00. We have had limited experience with this unit and others from this firm and find them reasonably satisfactory. One advantage is that the analytical probe replacement cost is only $15.00 as compared with some of the more expensive units.

Rugged units are available through Beckman Company and Leeds and Northrup Company at higher prices. These better units range in price from $300.00 up. There is no doubt but that they are better than the lower priced units, however, it appears to the writer that the conditions under which the meter must operate do not warrant the more expensive installation. If spare parts were carried for one of the lesser priced units and efforts were made to keep the unit reasonably free of dust by a portable cover, satisfactory operation could be maintained.

If questions arise regarding operations or control, we request that you contact the writer. Our full interest and cooperation is assured in the proper operation of your waste treating and handling facilities.

Respectfully submitted,

BETZ LABORATORIES, INC.

MUP/cam
cc: + 3
Enc.

Max U. Priester
Co-Director
Consulting Services

ter analyses

BETZ LABORATORIES, INC.
PHILADELPHIA, PA. 19124

Milford Rivet and Machine company
Penn Division
Hatboro, Penna.

sample dated: / / rec'd 8-19-64

SAMPLING POINT	Composite Raw	Composite Treated	Basin #2 Raw 7-29-64	Basin #2 Treated 7-29-64	Basin #3 Raw 8-12-64	Basin #3 Treated 8-12-64
mmonia N, ppm						
arbon Dioxide CO_2, ppm						
tal Hardness $CaCO_3$, ppm						
lcium $CaCO_3$, ppm						
gnesium $CaCO_3$, ppm						
enolphthalein kalinity as $CaCO_3$, ppm	28	2				
thyl Orange kalinity as $CaCO_3$, ppm	360	246				
fate SO_4						
oride Cl, ppm						
ca SiO_2, ppm						
al Phosphate PO_4, ppm						
ho Phosphate PO_4, ppm						
	8.7	8.3	8.1	7.6	9.3	8.6
cific Conductance, omhos 18C						
cific Conductance, omhos 18C (corrected)						
al Iron as ppm	2.2	3.8				
nide as CN, ppm	1.0	0.4	5.0	0.0	22	2
ended Solids, ppm	180	55		10		42

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BETZ LABORATORIES, INC.

GENERAL OFFICES • ENGINEERING HEADQUARTERS | PHILADELPHIA 24, PA.

May 27, 1963

Milford Rivet and Machine Company
Penn Division
Hatboro, Pennsylvania

Attention: Mr. Franklin Sahm, Manager

RE: Industrial Waste Plant
Supervisory Contract

Gentlemen:

On May 16, 1963 the regular monthly visit was made to your Hatboro plant for the purpose of reviewing the operations of your industrial waste treatment facilities.

We reviewed the results of the past month's operations and discussed the problems with supervising and operating personnel. In general, it appeared that a satisfactory effluent was being prepared and the effluent being discharged was meeting the requirements of the Authority.

At the present time you are treating approximately three tanks per day, this includes liquid being drawn from the lagoons. We were pleased to see the liquid level very low in all lagoons and you were in the process of having the sludge removed. One area had been completely emptied or cleaned and the second was in the process of being cleaned. Our inspection indicated that a high volume of sludge was also contained in the third lagoon and it was recommended that you give consideration for cleaning this one at this time. It is to your advantage to keep these ponds as clean as possible in order to get maximum ground absorption and full storage capacity. As was indicated to you, the treatment procedure has been somewhat modified by reducing the pH of coagulation with the result that lesser amounts of sludge are experienced. We hope this modification will reduce the annual cost for cleaning.

A series of samples collected from the several batches treated were observed by the writer with two sets being delivered to our laboratory for further testing and examination. Also, the composited raw and the composited treated had been subjected to laboratory study. All of the data appear on the attached report. Your review of these data will show that cyanide was completely destructed, however, the turbidity and suspended solids in the

composit treated sample was slightly higher than normal although not of sufficient concentration to be of serious significance.

On the individual samples the results were reasonably good although again we point out that where the pH was 9.4, the suspended solids in the effluent were 44 ppm. Better results can be obtained if the pH is reduced. The suspended solids content in the composited treated sample exceeded 100 ppm. It would appear to the writer that there may have been some mixture of samples in this compositing. We request that your operator exercise extreme care when this composite is made.

It was noted that the pH meter is not operative and that the control is being exercised by the use of pH papers. We strongly recommend that the pH meter be repaired and maintained for continued use. The accuracy of control when papers are used is not sufficient for the most efficient treatment results.

It was noted that the mechanical agitator in treatment tank #4 had been repaired and that you were now able to use all units for handling and treating the waste. This should provide sufficient flexibility that adequate settling time can be alloted to each batch treated to assure improved chemical treatment.

It is reported that your water softener is operating satisfactorily and that your boiler controls are being held within the recommended limits. These phases of your operation were observed and checked and found to be satisfactory.

If questions arise or trouble develops between the writers regularly scheduled visit please do not hesitate to contact this office. You are assured of our continued interest and full cooperation.

Very truly yours,

BETZ LABORATORIES, INC.

Max U. Priester

Max U. Priester
Co-Director
Consulting Services

MUP ko'd
Enc.
cc: #3

ter analyses

FOR

Milford Rivet and Machine Co.
Penn Division
Hatboro, Pennsylvania

Industrial Waste Plant
Supervisory Contract

BETZ LABORATORIES, INC.
PHILADELPHIA 24, PA.

sample dated; May 16, 1963

SAMPLING POINT	Composite Raw	Composite Treated	Basin #2 Raw 5/01/63	Basin #2 Treated 5/01/63	Basin #3 Raw 5/08/63	Basin #3 Treated 5/08/63
Ammonia as N, ppm						
Carbon Dioxide as CO_2, ppm						
Total Hardness as $CaCO_3$, ppm						
Calcium as $CaCO_3$, ppm						
Magnesium as $CaCO_3$, ppm						
Phenolphthalein Alkalinity as $CaCO_3$, ppm	84	42				
Methyl Orange Alkalinity as $CaCO_3$, ppm	824	558				
Sulfate as SO_4, ppm						
Chloride as Cl, ppm						
Silica as SiO_2, ppm						
Total Phosphate as PO_4, ppm						
Ortho Phosphate as PO_4, ppm						
pH	9.1	8.8	8.7	8.7	9.4	9.4
Specific Conductance, micromhos 18C						
Specific Conductance, micromhos 18C (corrected)						
Total Iron as Fe, ppm	3.8	6.8				
Cyanide as CN, ppm	3.1	0.0	0.0	0.0	6.3	0.3
Turb. Units	200	65				
Suspended Solids, ppm	314	102		18		44

BETZ LABORATORIES, INC.

GENERAL OFFICES • ENGINEERING HEADQUARTERS | PHILADELPHIA 24, PA.

February 1, 1963

Milford Rivet and Machine Company
Penn Division
Hatboro, Pennsylvania

Attention: Mr. Franklin Sahm, Manager

Subject: Industrial Waste Plant
Supervisory Contract

Gentlemen:

The writer visited your Hatboro Plant on January 17 for the purpose of reviewing the operations of your waste treatment units. We were pleased to find the plant functioning in what appeared to be a satisfactory condition, with all of the wastes being treated in accordance with instructions.

Your replacement operator appears to be grasping general plant operation and has indicated an interest to learn more. The writer has promised to continuously provide additional information on the occasion of each visit to the plant. By additional instruction we are confident that the operator's interest will increase and his ability to produce a satisfactory waste will be greater.

The samples collected and treated by the operator have been observed and the results are somewhat variable based on observation. We have collected a number of samples for review in our laboratory, the results will be found on the attached report.

On the composited sample, which consists of a portion of each batch treated, you will note that the suspended solids content has been reduced from 186 in the raw to 60 ppm in the treated. The cyanide has been completely destroyed and there are only trace values of oil remaining. An increase in iron is noted no doubt due to the small amount of iron added for coagulation purposes that has not been given sufficient time for complete settling. The pH is favorable at 9.3 for complete iron precipitation.

In the individual samples examined, on one complete destruction of cyanide was not obtained with a residual of 1 ppm. This is not particularly serious but is indicative of chlorine deficiency. It is apparent that this has resulted since it is reported that false color appears in the waste when orthotolidine is added. We have discussed this with the operator and have attempted to point out the difference in color when chlorine is present and when it is absent.

On the other sample the cyanide was completely destructed despite the fact that a much heavier concentration existed in the raw sample. The treated samples were reasonably free of suspended solids.

Inspections of the lagoons indicate them to be in good condition despite the extreme cold weather. As you are aware, there is always operating difficulties created by the extreme temperatures due to the fact that the exterior basins cannot be operated and the lagoons are ice covered. Therefore, it takes considerable flexibility to maintain good operations.

We have made a number of special tests on one or two of the batches in order to determine the reason for the false coloring that appears when orthotolidine is added. Unfortunately, the samples that were delivered to our laboratory did not show this effect to any degree and consequently, it is impossible to determine the cause. Additional studies will be made on this on the occasion of the writer's next visit.

We checked the effluent of your water softener on a sample collected recently and found that it was delivering a total hardness value of 10 ppm. This was called to your attention as well as to the attention of our Service Engineer and we presume by this time he has discussed the condition with you.

We urge that the continued close surveillance of the plant operations be given and that nothing be discharged to the public sewer system that would interfere with the sewage treatment process. Our continuing interest and full cooperation is assured.

Very truly yours,

BETZ LABORATORIES, INC.

Max U. Priester

Max U. Priester
Co-Director
Consulting Services

MUP/cs
cc: +3
enc.

AR100050

Water analyses

FOR | Milford Rivet and Machine Co.
Hatboro, Pennsylvania

BETZ LABORATORIES, INC.
PHILADELPHIA 24, PA.

sample dated:

SAMPLING POINT	Composite Raw	Composite Treated	Basin No. 4 Raw 12/19	Basin No. 4 Treated 12/19	Basin No. 3 Raw 1/9	Basin No. 3 Treated 1/9
Ammonia as N, ppm						
Carbon Dioxide as CO_2, ppm						
Total Hardness as $CaCO_3$, ppm						
Calcium as $CaCO_3$, ppm						
Magnesium as $CaCO_3$, ppm						
Phenolphthalein Alkalinity as $CaCO_3$, ppm	84	50				
Methyl Orange Alkalinity as $CaCO_3$, ppm	620	368				
Sulfate as SO_4, ppm						
Chloride as Cl, ppm						
Silica as SiO_2, ppm						
Total Phosphate as PO_4, ppm						
Ortho Phosphate as PO_4, ppm						
pH	9.5	9.3	10.0	10.0	9.8	9.8
Specific Conductance, micromhos 18C						
Specific Conductance, micromhos 18C (corrected)						
Total Iron as Fe, ppm	2.2	5.8				
Suspended Solids, ppm	186	60		26		42
Cyanide as CN, ppm	6.7	0.0	2.4	1.0	4.6	0.0
Turb. Units	75	30				
Chloroform Ext. ppm	11	5.0				
MUP/cs						

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FEB 6 1963
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GENERAL OFFICES • ENGINEERING HEADQUARTERS | PHILADELPHIA 24, PA.

December 5, 1962

Milford Rivet & Machine Company
Penn Division
Hatboro, Pennsylvania

Attention: Mr. Franklin Sohm
Manager

Re: Industrial Waste Plant
Supervisory Contract

Gentlemen:

In accordance with the subject contract the regular visit to your waste treatment plant was made November 15. At that time observations of all facilities were made and discussions with operating and supervising personnel held in order to disclose any operating difficulties.

It was apparent that your waste treatment plant had been operating satisfactorily and the wastes being produced complied with municipal requirements.

A review of your operating records confirm this. Also, we observed samples collected from several batches treated and with the exception of occasional slight excess of suspended solids remaining in the treated sample, it was apparent that results were satisfactory.

In reviewing the analytical data it is noted that the treated composite shows that cyanide has been successfully destroyed and turbidity reduced to 9 units. A somewhat excessive amount of suspended solids, 150 ppm was noted although we were advised that this occurred as after precipitation following regular settling. This is also apparent in some of the "spot" samples collected.

Discussions have been held with the superintendent of the Sewage Treatment Plant and he finds no complaints in regards to the discharges from your plant. We emphasize the need for continued good control.

Your lagoons appear to be in excellent condition with relatively low water levels and the bulk of the sludge being accumulated in one basin and the oil bearing wastes in the other. It was noted that the treated samples show excellent oil reduction.

Discussions were held in regards to softener operation and its relation to internal boiler conditions. We collected a sample from the effluent of the softener and found that despite the fact the unit was in the middle of the run, the total hardness was 9 ppm and the chlorides 12 ppm. It is apparent from this that some leakage of hardness is being experienced and the writer will again check this unit on the next regular visit.

In the meantime we have had our district service engineer visit with you and discuss boiler conditions and offer recommendations. These will also be further discussed on the occasion of our next visit. In the meantime, if questions arise regarding operations of any of the units where our services are applicable, please do not hesitate to contact the writer.

Respectfully submitted,

BETZ LABORATORIES, INC.

Max U. Priester
Co-Director
Consulting Services

MUP AS
cc: +3
Enc.

FOR | Milford Rivet & Machine Company
Hatboro, Pa.

date | December 5, 1962

sample marked / sample obtained	Raw Composite	Treated Composite	Softener Effluent
oroform Extractable, ppm	13.7	2.9	
al Hardness			8.9
Alkalinity	78	60	
O." Alkalinity	618	438	
oride			12
	9.2	9.0	
al Iron as Fe, ppm	10	6.8	
nide as CN, ppm	4.3	0.0	
pended Solids, ppm	256	150	
bidity Units	16	9.0	

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analysis

BETZ LABORATORIES, INC.
PHILADELPHIA 24, PA.

FOR: Milford Rivet & Machine Company
Hatboro, Pa.

date: December 5, 1962

sample marked / date sample obtained	Raw 10-18 Basin #1	Treated 10-18 Basin #1	Raw 11-14 Basin #1	Treated 11-14 Basin #1
pH	8.5	3.2	8.0	3.1
Cyanide as CN, ppm	0.0	0.0	0.0	0.0
Suspended Solids, ppm		26		24

MUP AS

AR100055

BETZ LABORATORIES, INC.

GENERAL OFFICES • ENGINEERING HEADQUARTERS | PHILADELPHIA 24, PA.

August 30, 1962

Milford Rivet and Machine Company
Penn Division
Hatboro, Pennsylvania

Attention: Mr. Franklin Sohm,
Manager

Subject: Industrial Waste Plant
Supervisory Contract

Gentlemen:

In accordance with our agreement, the writer visited your industrial waste treating plant on August 21, for the monthly inspection.

At this time the facilities were observed and records of treatment during the past month reviewed. It is apparent from these records and samples retained for the writer's inspection that the operating results and the effluent produced have been satisfactory.

We discussed with your operating and supervising personnel minor problems that had arisen and exist although it was found that these were at a minimum. It appeared that you were handling approximately 2 tanks daily based on present production and that little or no difficulty has been experienced in obtaining reasonable clarification. However, it is noted from the samples that were collected that suspended solids continue to exist in the completed or treated effluent and that small amounts of cyanide exist in the composite treatedand one of the batch tanks treated on August 15. This is the first time for quite a length of treating experience that the residual cyanide has not been completely destroyed. It is essential that the treatment procedure be reviewed and that care be taken to assure adequate free chlorine for the destruction of the cyanide on the treated waste. With the reduced schedule it is possible to provide longer settling periods and thereby possibly reduce the suspended solids content. You will note also that the turbidity in the treated composite was higher than found in the raw composite. Similarly the iron was higher in the treated composite than in the raw composite. We call your attention to these factors since they are quite unusual and must be corrected.

If these conditions continue to exist it may be desirable for the writer to spend some sustained time at your plant with your operator in reviewing the entire coagulation process. You will recall that we discussed this on a previous visit, however, it was to be held in abeyance until after certain internal processing modifications were completed. We will appreciate being kept informed regarding the

progress of these in order that some additional time can be spent with your operator in improving the effluent results.

The above items discussed are not of extreme serious nature although they should be given attention.

It was noticed that the lagoon levels were being maintained very low which is desirable.

We trust you will find the above clear and complete for your use. If questions arise before the next regularly scheduled visit, please do not hesitate to contact the writer.

Very truly yours,

BETZ LABORATORIES, INC.

Max U. Priester
Co-Director
Consulting Services

MUP MD
cc: +3
Enc.

analysis

BETZ LABORATORIES, INC.
PHILADELPHIA 24, PA.

FOR Milford Rivet and Machine Co.
Hatboro, Pennsylvania

date 8/29/62

sample marked / date sample obtained	Composite Raw	Composite Treated	Raw Basin #1 8/1/62	Treated Basin #1 8/1/62	Raw Basin #4 8/15	Treated Basin #4 8/15
Analysis #	H-2835	H-2836	H-2837	H-2838	H-2839	H-284
pH	5.7	9.1	8.5	8.5	9.5	9.6
M-Alkalinity as $CaCO_3$, ppm	28	468				
Total Iron as Fe, ppm	1.5	3.6				
Cyanide as CN, ppm	3.1	0.9	0.0	0.0	4.5	2.2
Suspended Solids, ppm	60	68		22		28
Oil, ppm	12	10				
Turbidity units	75	125				

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Form 3227

BETZ LABORATORIES, INC.

GENERAL OFFICES | ENGINEERING HEADQUARTERS
GILLINGHAM & WORTH STREETS, PHILADELPHIA 24, PA.

CONSULTANTS ON INDUSTRIAL WATER PROBLEMS

April 27, 1962

Milford Rivet & Machine Company
Penn Division
Hatboro, Pennsylvania

Attention: Mr. Franklin Sohm,
Manager

Re: Industrial Waste Plant
Supervisory Contract

Gentlemen:

In accordance with the subject contract the writer visited your Hatboro Plant on April 10 for inspection of waste facilities and sampling for analysis and tests in our laboratory.

On the basis of our inspection it appears that recently good operation is being maintained at all times. Variable wastes are being received from processing and the operator is able to provide a suitable effluent. In case the treatment procedure is not up to par, the partially treated wastes are discharged to the lagoon for further natural settling and oxidation.

Samples were collected and examined and in most cases practically complete destruction of Cyanide was obtained. Some residual Cyanide was present in one of the treated water samples and a small amount in the composited sample but both showed values less than 1 ppm.

The suspended solids content of the many samples appeared to be within tolerable limits and oil concentrations were completely acceptable.

Certain types of waste appear to give much more difficulty than others although this is probably due to blending fresh wastes with several of the more difficult wastes drawn from the oil lagoon. However, this procedure as practiced by your operator maintains the lagoons in very good condition.

With regards to these units it is noted that the sludge has been transferred from Lagoons 1 and 2 over to Lagoons 3 and 4 respectively. This permits greater concentrations when cleaning and also allows greater use of Ponds 1 and 2.

It was also noted that the unhoused treatment tanks are now available for use with the passing of cold weather. This will provide additional flexibility and also longer settling time for the wastes.

BETZ LABORATORIES, INC.

If questions arise regarding the general operations between the writer's regularly scheduled visits, please do not hesitate to contact this office. Also, please be advised that one of our service engineers will stop and discuss the operation of your boiler and softener in the near future. We appreciate the opportunity of continuing to extend our specialized services.

Respectfully submitted,

BETZ LABORATORIES, INC.

Max U. Priester

Max U. Priester
Co-Director
Consulting Services

MUP:mm
cc: 43

ter analyses

BETZ LABORATORIES, INC.
PHILADELPHIA 24, PA.

Milford Rivet Company
Penn Division
Hatboro, Pennsylvania

sample dated: Received: 4-11-62

SAMPLING POINT	Composite Raw	Composite Treated	Basin No. 2 Raw 3-14-62	Basin No. 2 Treated 3-14-62	Basin No. 2 Raw 3-28-62	Basin No. 2 Treated 3-28-62
Ammonia as N, ppm						
Carbon Dioxide as CO_2, ppm						
Total Hardness as $CaCO_3$, ppm						
Calcium as $CaCO_3$, ppm						
Magnesium as $CaCO_3$, ppm						
Phenolphthalein Alkalinity as $CaCO_3$, ppm	52	68				
Methyl Orange Alkalinity as $CaCO_3$, ppm	522	388				
Sulfate as SO_4, ppm						
Chloride as Cl, ppm						
Silica as SiO_2, ppm						
Total Phosphate as PO_4, ppm						
Ortho Phosphate as PO_4, ppm						
pH	9.1	9.2	8.5	9.3	8.4	8.4
Specific Conductance, micromhos 18C						
Specific Conductance, micromhos 18C (corrected)						
Total Iron as Fe, ppm	2.0	7.2				
Cyanide as CN, ppm	10.0	0.6	17.4	0.3	0.0	0.0
Suspended Solids, ppm	200	86		4		74
Turbidity Units	175	55				
Oil in ppm	42	20				

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